
ENGINEERING STANDARDS UPDATE

Standards are serious business, but this newsletter isn't.

Topics this month:

- Training & Qualification
- Report Non-Gov't Standards Work
- LANL Standards Issued in Sept or so
- Engineering Processes News
- O&M Criteria Changes
- DOE Technical Standards Action
- National Standards Action
- When Good Conduct of Engineering Isn't Followed

The LANL Engineering Standards: <http://engstandards.lanl.gov/>

Note: This newsletter has hyperlinks all over but the blue/underlined formatting may not show. Hover your cursor where you might expect one.

Masks (or not) have been in the news a lot lately, so that's the meme theme.



Fire Prevention Week: "Serve Up Fire Safety in the Kitchen"

Designed to educate people about the danger of fires and save lives, President Calvin Coolidge proclaimed Fire Prevention Week a national observance in 1925, making it the longest-running public health observance in our country. This year, [Fire Prevention Week focuses on cooking fire safety with its theme "Serve Up Fire Safety in the Kitchen" which draws attention to the fact that unattended cooking is the leading cause of U.S. home fires and associated fire injuries and fatalities](#); nearly half (49 percent) of all U.S. home fires are caused by cooking activities. Approximately 173,000 cooking fires occur in homes each year, resulting in 550 deaths, 4,820 reported fire injuries, and more than \$1 billion in direct property damage.

TRAINING & QUALIFICATION

ES Division training specialist Ruby Molinar has returned to her previous assignment at TA-16 and Stan Hayes has assumed that role. We wish her the best out there!

For upcoming courses via Webex (registrants will receive Webex invitation by the day before class).

COE Safety Basis Overview for Engineers Course [39564](#), Thurs, Oct 15, 9–11 am via Webex. POC: Joy Getha, 5-9586, jlgetha@lanl.gov.

ESM Chapter 21 Software -- Overview and Owners Courses – W/Tr, Oct 28, 29

A few of you are new “Owners” of nuclear safety or other ML-1, -2, or -3 software (installed in a system, or maybe for design/analysis). Most people in that situation are or soon will be subject to ESM Chapter 21 Software and need to take required training on the chapter. So...if you, in fact, need live training, please enroll for the course(s) below. If you’re not sure what you need, contact me (5-8475) or SME/instructor Joy Getha, 5-9586, jlgetha@lanl.gov. Next offering will be several months from now.

- [38047](#) ESM Chapter 21 Software Overview Course 10/28 9-12:00. (RLMs and Owners)
- [34048](#) ESM Chapter 21 Software Owner’s Course 10/29 9-12:00. (just Owners return for this)

Electrical Standards – Wed, Nov 4, 8:00-noon

Four-hour course [17998](#) covers the electrical engineering standards in Chapter 7 of the LANL Engineering Standards Manual and discusses mandatory requirements and good practices for those involved in electrical design. Strongly suggested for electrical designers, electrical engineers, electrical safety officers, and facility managers. AEs are also encouraged to participate. Taught by Electrical Standards POC Eric Stromberg.

...and a reminder: [free LinkedIn Learning subscriptions for all](#)

See how you can sign up for individualized, self-paced and online professional development program with thousands of relevant courses delivered by industry experts.

For UTrain Courses: Registering: Go to [UTrain](#), search on course, select and enroll. Disenroll if you have to bail. AEs can also register; use token (CryptoCard) or contact ES T&Q coordinator Yolanda Trujillo at 664-0118 or yjtrujillo@lanl.gov with Z number.



REPORT NON-GOV'T STANDARDS WORK

If you're a Lab employee serving on a committee maintaining or writing a national or international code or standard for which I am not aware, please contact me (same when work stops). Examples are ASME, ASTM, ISO, NFPA, etc. Over 60 employees serve on over 150 committees doing such work which we must report to DOE-HQ per the contract ([more than any other site](#)). Standards Heroes all, they include:



| | | |
|--|---|---|
| Randall D. Austin Phillip C. Berry Luiz Bertelli David A. Bingham Kelly L. Bingham Amber N. Black Douglas L. Brown David A. Bruggeman Brittain J. Catron Ondřej Čertík Martha K. Y. Chan Ralph J. Clayton Paul J. Contreras Theresa E. Cutler Paula R. Diepolder Shannan D. Diffey Scott W. Doebeling Keenan T. Dotson Donald J. Dudziak David A. Fry David P. Fuehne Michael (Misha) Gallegos Lloyd B. Gordon | Milan S. Gadd Dakota J. Gregory David P. Harvey Vladimir Henzl S. Davis Herring Jon E. (Rick) Hinckley Patrick W. Hochanadel Daniel A. Javernick Benjamin Karmioli Theodore J. Keppner Paul N. Kirpes Aaron C. Koskelo Brett R. Krueger Joel A. Kulesza Richard C. Lee Robert C. Little Li-Ta (Ollie) Lo Jean-Francois Lucchini Michael W. Mallett Kattathu J. Mathew Eric R. McFarlane Thomas D. McLean Robert B. Merl | Murray E. Moore William L. Myers Raymond T. Newell Glen J. Pappas Donivan R. Porterfield Jose E. Rodriguez Christopher Romero Mark S. Rosenberger Scott R. Salisbury Michael W. Salmon Michelle E. Silva Dusan Spornjak Phillip H. Stauffer Jacob Stinnett James R. Streit Jared T. Stritzinger Deborah A. Summa Ari Ben Swartz Taunia S. Van Valkenburg Jeffrey J. Whicker Brandon M. Wilson Shaun K. Wrightson Ning Zhang |
|--|---|---|

LANL STANDARDS ISSUED IN SEPT OR SO
Engineering Standards Manual ESM STD-342-100

| ESM-Chapter | Section | Title | Rev. | Date | Summary of latest Revision |
|-----------------------------|---------|--|------|-----------|---|
| Chapter 2 - Fire Protection | D40 | Reference: Fire Protection Div of Responsibilities for Construction Inspection | 4 | 9/30/2020 | Updated with new instructions and R2A2s |
| Chapter 16 - IBC Program | IBC-IP | | | | |



Engineering Standards Update
Topics this month: Oct 2020

| | | | | | |
|------------------------------|---------------|--|---|-----------|---|
| Chapter 17 - Pressure Safety | NASME | Reference: When listed components cannot be used, reputable manufacturers as discussed in NASME-1-a, b, etc. (xls) (LANL only) | - | 9/21/2020 | |
| Chapter 19 - Communications | D60 | D60, Communications | 1 | 9/1/2020 | See document or Sept Update |
| Chapter 21 - Software | SOFT-GEN FM04 | SSC Software Change Package Form and Instructions | 1 | 9/28/2020 | Clarified when simulated environment testing is required, aligning to the Ch 21 graded approach, and added additional direction on the testing decisions to be made. Also, added guidance on concurrent change management. Implemented via revised VAR-10365-R1 . |

Master Specs [STD-342-200](#)

| Spec Number | Rev. | Spec Title | Effective | Summary of Changes |
|--|------|---|-----------|---|
| For the structural specs, thanks to Tadz Kostrubala and POC Glen Pappas for the revisions. | | | | |
| 03 3021 | 4 | Reinforced Concrete - High Confidence | 10/1/2020 | Changes made are typo fixes in formwork submittals and rebar shipping tags added to rebar-CMTR submittal. |
| 03 3001 | 14 | Reinforced Concrete | 9/30/2020 | Reinforcement bundle CMTR tag retention and welding submittal requirement clarification. |
| 04 2220 | 3 | Reinforced Unit Masonry | 09/03/20 | Revised submittals, fire resistance in 2.4.C. |
| 05 1000 | 11 | Structural Metal Framing | 09/03/20 | Revised submittals, material specs for HSAs |
| 05 2100 | 5 | Steel Joist Framing | 09/03/20 | Revised submittals |
| 05 3000 | 4 | Metal Decking | 09/03/20 | Revised submittals |
| 05 4000 | 6 | Cold-Formed Metal Framing | 09/03/20 | Revised submittals, clarified 1.1.B |
| 05 5000 | 7 | Metal Fabrications | 9/21/2020 | Streamlined welding-related submittals and QC/QA requirements |
| 05 5213 | 4 | Pipe and Tube Railing | 09/03/20 | Revised submittals |
| 05 5313 | 1 | Bar Gratings | 09/03/20 | Revised submittals |
| 22 0548.23 | 1 | Vibration and Seismic Controls for Mechanical Systems | 9/21/2020 | Streamlined welding-related submittals and QC/QA requirements |

| For the electrical specs, thanks to POC Eric Stromberg and his committee that reviewed them. | | | | |
|--|---|---|------------|--|
| 26 0548.16 | 3 | Seismic Controls for Electrical Systems | 09/03/20 | Revised submittals, other minor changes; also thanks to Structural specs POC Glen Pappas. |
| 26 2500 | 4 | Enclosed Bus Assemblies | 09/02/2020 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification General edits to clarify meaning. Added guidance on wall penetrations. Added requirement to supply a hook stick mount for each hook stick. Changed requirement for thermal imaging to optional. |
| <u>26 4100</u> | 4 | Facility Lightning Protection | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Clarified that the lightning grounding electrode must be different than the building grounding electrode. Added guidance on use of materials, from the perspective of corrosion. Added guidance on installation of grounding electrode such that it can be tested at periodic intervals. Removed requirement for empirical testing. Added requirement that bonding jumper to electrical grounding electrode system be outside the building. |
| <u>26 4115</u> | 4 | Lightning Protection for Explosive Facilities | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Added note that the required 10 ohms contact resistance to the soil will have to be calculated. Testing is not possible after installation. Clarified that determination of "good condition" is visual. Added guidance on use of materials, from the perspective of corrosion. |
| <u>26 4300</u> | 2 | Surge Protective Devices | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Clarified the function of the indicator LEDs on the SPD. Clarified requirements for the connection point of the SPD to the panel. |
| <u>26 5100</u> | 6 | Interior Lighting | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Added guidance on the preference for 120 volt systems instead of 277 volt systems, due to maintenance. |
| <u>26 5200</u> | 7 | Safety Lighting | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Changed requirement for the number of spare lamps. Added option for lithium ion batteries. Added guidance for photo luminescent signs (they don't work when the regular lighting is LED). |

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| <u>26 5600</u> | 6 | Exterior Lighting | 09/02/20 | Streamlined submittal requirements. Edited seismic requirements to be more applicable to each specification. General edits to clarify meaning. Changed lightning ground strike density from 8 to 3. Added guidance for LED luminaires. Removed Warranty language. Changed requirement for fuses at base of pole to optional. |
| <u>27 1000</u> | 7 | Structured Cabling | 09/03/20 | Revised to align with ESM Ch 19 D60 Rev. 1. Conduit requirements revised for vertical pathways within the building between comm. rooms to account for fiber taking the place of a majority of the copper count formerly needed. Horizontal pathways allowable bends increased from 180 degrees to 225 degrees between pull points. Added G6000 for labs or where electrical and communications are installed in the same raceway, use of white tape for identification, and seismic requirements |

Also—when the Standards Team wraps another FY it's time to run the numbers. Since last September, we:

Revised or created:

- 11 ESM Chapter, Section, or subtier documents (total now 375 documents)
- 39 LANL Master Specs (2 cancellations); total now 200
- 1 CAD Stds Manual change via Variance
- 18 Std Details (16 new, total now 260 sheets)

Offered the following courses:

- Intro to LANL Eng Standards (two times)
- ESM Ch 21 Software Intro, Owners (Nov)
- Electrical Standards (quarterly)

Designer Creates Mimicking Masks That Smile and Display Emojis (Interesting Engineering)

No, this one doesn't promise a better filtration efficiency but something much more fun [if you're into it]

<https://interestingengineering.com/designer-creates-mimicking-masks-that-smile-and-display-emojis>

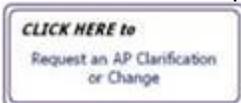


ENGINEERING PROCESSES NEWS

Per CoE Eng Processes Manager is Sarah Terrill, 667-7788, sterrill@lanl.gov;

- AP-341-802 System Health Reporting in approval process
- AP-341-705 Make or Buy Determination for Design Engineering in approval process

Please enter issues with APs in the SharePoint issues database. Use the live button below, same one that's found in the upper right of the Processes SharePoint [homepage](#).



A webpage of the AP pdfs can be reached from LANL Internal with any browser/machine combo (also, you can easily get to int.lanl.gov from myemail.lanl.gov). Once in, you can navigate from the top of the [CoE home page](#) or directly [here](#). On the other hand, if you need the AP Word forms, open a terminal session and use IE for SharePoint for best results. When all else fails, email Christina Salazar-Barnes.

O&M CRITERION CHANGES

Below are recent O&M Criterion and related Preventative Maintenance Instruction (PMI) changes issued by MSS-MP, the Maintenance Programs Group of Maintenance and Site Services Division. Implementation is required 30 days from issue date for non-nuclear facilities, 60 days for nuclear facilities.

It's best to use Internet Explorer to access them on the SharePoint site to avoid issues.

| | |
|---|---|
| <p>The PMIs listed below have been revised to show only the Checklists. You must refer to the associated O&M to obtain the administrative portion. Any questions, please contact the document author.</p> <p>Also, Work Orders that reference the below PMIs shall also reference the below forms such that it is included in the work package:</p> | |
| <p>PMI: 415-A Aboveground Storage Tank (AST) Inspection, Testing, and Maintenance - 9/10/20</p> | <ul style="list-style-type: none"> • Initial Issue |

DOE TECHNICAL STANDARDS ACTION

[Tech Stds Program](#) [postings](#) in the past month: None

NATIONAL STANDARDS ACTION

FYI only since LANL uses the edition required by the 2015 IBC, so not this (yet):

Document number: [ACI 301](#)

Publication Date: **September 2020**

Title: **Specifications for Concrete Construction (ACI 301-20)**

Type of Change: **Complete Revision**

The manufacturers normally transition to latest equipment standards like this so LANL can, too:

Document number: [IEEE C62.11](#)

Publication Date: **5/6/2020**

Title: **Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV)**

Type of Change: **Complete Revision**

ESM policy (based on NFPA policy) is: Errata (correct errors) to any document and Tentative Interim Amendments (for NFPA) are mandatory regardless of contract award date or code of record. Thus, this Amendment is to be used. And we generally use latest NFPA non-electrical standards and deal with any conflicts between those and the codes that we follow that invoke them.

Document number: **NFPA 13 AMD 8**

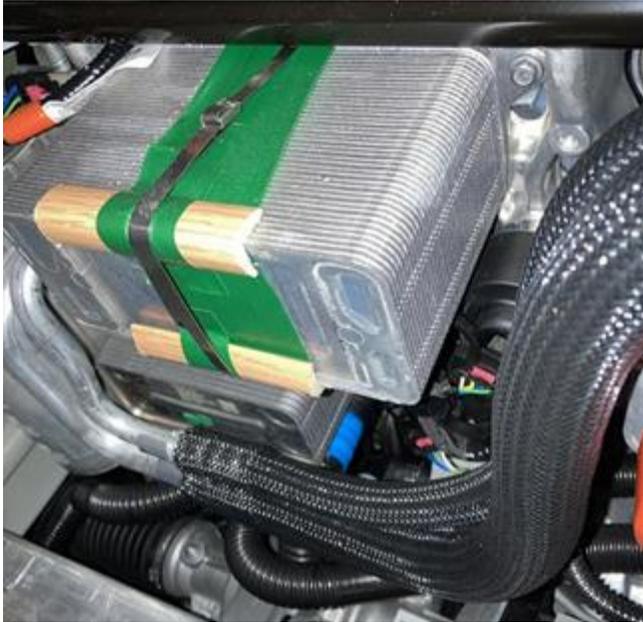
Publication Date: **8/11/2020**

Title: **Standard for the Installation of Sprinkler Systems**

Type of Change: **Amendment**

WHEN GOOD CONDUCT OF ENGINEERING ISN'T FOLLOWED

Tesla Model Y Owners Are Discovering Fake Wood in Their Cooling Systems (Interesting Engineering)



A forum of Tesla owners shed light on the questionable matter.
<https://interestingengineering.com/tesla-model-y-owners-are-discovering-fake-wood-in-their-cooling-systems>

LAST MONTH'S UPDATE TOPICS

Miss an issue? The archive is at "Monthly Update" on the Standards homepage. Last month's topics:

- **Procurement of Swagelok, Rosemount, Canberra for Nuclear Service**
- **Training & Qualification**
- **LANL Standards Issued in August or so**
- **Engineering Processes News**
- **O&M Criteria Changes**
- **DOE Technical Standards Action**
- **National Standards Action**
- **When Good Conduct of Engineering Isn't Followed**

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